

CLAIMS

1 1. An anti-bob system operable to control a shock damping device
2 of a cycle, said system including:

3 a crank axle torque detector operable to detect a level of torque applied
4 to a crank axle, and to provide a control signal corresponding to said level of
5 torque; and

6 a shock damping device coupled to a frame of said cycle, said shock
7 damping device functioning to absorb and dampen mechanical shocks
8 communicated to said frame, said shock damping device including an activator
9 for controlling the damping function thereof, said activator being operable to
10 receive the control signal from said crank axle torque detector and to control
11 the shock damping device in response thereto; whereby said shock damping
12 device is controlled in response to the level of torque applied to said crank axle.

1 2. The system of claim 1, wherein said control signal is a
2 mechanical signal.

1 3. The system of claim 2, wherein said mechanical signal
2 comprises the displacement of a control cable.

1 4. The system of claim 2, wherein said mechanical signal
2 comprises a change in pressure of a hydraulic fluid.

1 5. The system of claim 1, wherein said control signal is an
2 electrical signal.

1 6. The system of claim 1, wherein said torque detector includes:
2 a swing arm pivotally suspended from said frame, said swing arm
3 having said crank axle rotatably supported thereupon; and
4 a biasing member disposed so as to impose a biasing force on said
5 swing arm so as to urge the swing arm in a first direction relative to said frame;
6 whereby when a torque is applied to the crank axle the torque operates to
7 counter at least a portion of the biasing force so as to displace the swing arm in
8 a second direction different from said first direction; whereby said
9 displacement comprises said control signal.

1 7. The system of claim 6, wherein said biasing member is a spring.

1 8. The system of claim 6, wherein said torque detector further
2 includes a stop member disposed so as to limit the motion of said swing arm in
3 said first direction.

1 9. The system of claim 6, further including a cable which is in
2 mechanical communication with the swing arm and with the activator of said
3 shock damping device so that said displacement of the swing arm is
4 communicated to said activator by said cable.

1 10. The system of claim 6, wherein said system further includes a
2 volume of a hydraulic fluid which is in mechanical communication with the
3 swing arm and the activator of said shock damping device so that said
4 displacement of the swing arm is communicated to said activator by said
5 hydraulic fluid.

1 11. The system of claim 6, wherein said system further includes an
2 electrical transducer which is in mechanical communication with said swing
3 arm and in electrical communication with the activator of said shock damping
4 device, said transducer being operable to convert the displacement of said
5 swing arm into an electrical control signal and to convey that signal to said
6 actuator.

1 12. The system of claim 11, wherein said electrical transducer is a
2 piezoelectric transducer.

1 13. The system of claim 11, wherein said transducer is operable to
2 change its electrical resistance in response to the displacement of said swing
3 arm.

1 14. The system of claim 6, wherein the biasing member is
2 adjustable so that the biasing force imposed on said swing arm may be varied.

1 15. The system of claim 1, wherein said torque detector includes:
2 a positionally displaceable bearing assembly supported upon said
3 frame, said bearing assembly having said crank axle rotatably supported
4 thereupon; and
5 a biasing member disposed so as to impose a biasing force on said
6 bearing assembly so as to urge said bearing assembly in a first direction
7 relative to said frame; whereby when a torque is applied to the crank axle, the
8 torque operates to counter at least a portion of the biasing force so as to
9 displace the bearing assembly in a second direction different from said first
10 direction, whereby said displacement comprises said control signal.

1 16. The system of claim 15, wherein said bearing assembly is
2 supported upon said frame by a swing arm which is pivotally attached to said
3 frame.

1 17. The system of claim 15, wherein said bearing assembly is
2 supported upon said frame by a housing which allows the bearing assembly to
3 slide in said first direction and said second direction.

1 18. The system of claim 17, wherein said biasing member is
2 disposed within said housing.

1 19. The system of claim 15, wherein said biasing member is
2 selected from the group consisting of: a spring, a body of elastomeric material,
3 a pneumatic cylinder, and combinations thereof.

1 20. The system of claim 1, wherein said activator is operable to
2 switch the shock damping device from an on state in which it functions to
3 dampen mechanical shocks communicated to said frame, to an off state in
4 which it does not dampen mechanical shocks communicated to said frame.

1 21. The system of claim 1, wherein said activator is operable to
2 control the shock damping device so as to vary the degree to which said shock
3 damping device functions to dampen mechanical shocks communicated to said
4 frame.

1 22. The system of claim 1, wherein said cycle includes a pedal
2 connected to the crank axle by a crank arm, and wherein the crank axle torque
3 detector comprises a pressure responsive device interposed between the pedal
4 and a foot of a user who is operating said cycle.

1 23. The system of claim 22, wherein said pressure responsive
2 device is affixed to a shoe disposed upon said user's foot.

1 24. The system of claim 22, wherein said pressure responsive
2 device is affixed to said pedal.

1 25. The system of claim 1, wherein said crank axle torque detector
2 is operable to detect a periodically varying level of torque and to provide a
3 control signal corresponding to said periodically varying level.

1 26. The system of claim 25, wherein said control signal corresponds
2 to the peak value of said periodically varying level.

1 27. The system of claim 25, wherein said control signal corresponds
2 to an average value of said periodically varying level.